

ICOS Switzerland

The Swiss Contribution to a Pan-European Environmental Research Infrastructure

ICOS

National Network Switzerland

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ICOS in a nutshell

ICOS, the Integrated Carbon Observation System, produces standardised, high-quality, and long-term greenhouse gas data. Our network of around 180 stations spans 16 European countries and beyond.

ICOS scientists measure greenhouse gas concentrations in the atmosphere and gas exchange between the atmosphere, land and ocean surfaces, which expands our knowledge of carbon sources and sinks and the carbon cycle.

ICOS data are produced following rigorous protocols. The standards created by the ICOS scientific community have been adopted by researchers around the world to increase data quality. All data are open and free for everyone through the ICOS Carbon Portal.

ICOS data are used by scientists and society alike: in scientific studies, climate models, validation of satellite data, and in support of policy making. The ICOS community of leading researchers creates insights that bring us closer to truly understanding our planet.



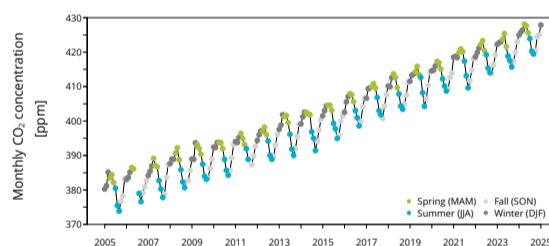
Switzerland as part of ICOS

Since the very beginning in 2013, ICOS Switzerland is the Swiss contribution to the Integrated Carbon Observation System Research Infrastructure. Project members are from six Swiss institutions, the National Focal Point is at ETH Zurich.

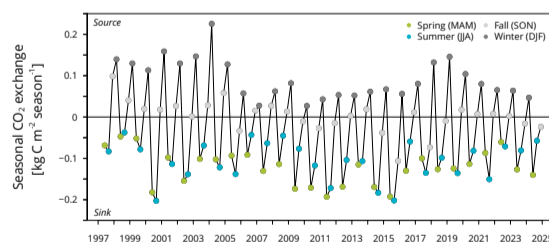
More than 20 years of continuous measurements at each station

Switzerland contributes with three measurement stations to ICOS: the atmospheric station Jungfraujoch, the ecosystem station Davos, and the urban station Basel. All three have been measuring greenhouse gases for more than 20 years and have played a pioneering role in advancing research in their respective fields. After intensive periods of upgrades, the stations have been certified as ICOS stations in 2018 (Jungfraujoch), 2019 (Davos) and 2024 (Basel).

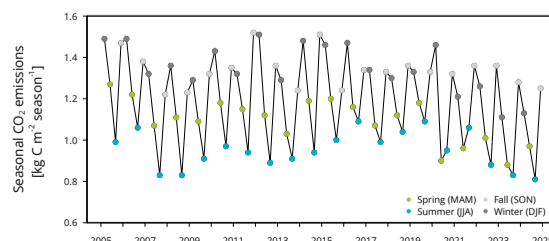
ICOS Switzerland data



CO₂ concentrations at Jungfraujoch station are steadily increasing since measurements started, and show a clear seasonal cycle with decreasing concentrations in spring/summer.



CO₂ exchange at Davos station shows highest CO₂ uptake in spring/summer. On the annual scale, the Norway spruce forest is a CO₂ sink, but first signs show that climate change might compromise this CO₂ uptake capacity.



CO₂ emissions at Basel station are lowest in spring/summer. Only in the last few years, a slight downward trend in CO₂ emissions is observed.

Three ICOS Switzerland stations

Jungfraujoch: ICOS Class 1 Atmosphere Station 3580 m a.s.l., alpine mountain station. Continuously measured CO₂ concentrations since 2004. Highest measurement station of ICOS.

Davos: ICOS Class 1 Ecosystem Station 1639 m a.s.l., subalpine forest station. Continuously measured CO₂ exchange since 1997. Only subalpine Class 1 forest station of ICOS.

Basel: ICOS Associated Ecosystem Station 264 m a.s.l., urban station. Continuously measured CO₂ emissions since 2004. One of the longest urban CO₂ flux records worldwide.

With its three unique stations, ICOS Switzerland is an out-standing national node within the Pan-European ICOS Research Infrastructure.



ICOS Switzerland in the spotlight Station videos



ICOS Carbon Portal

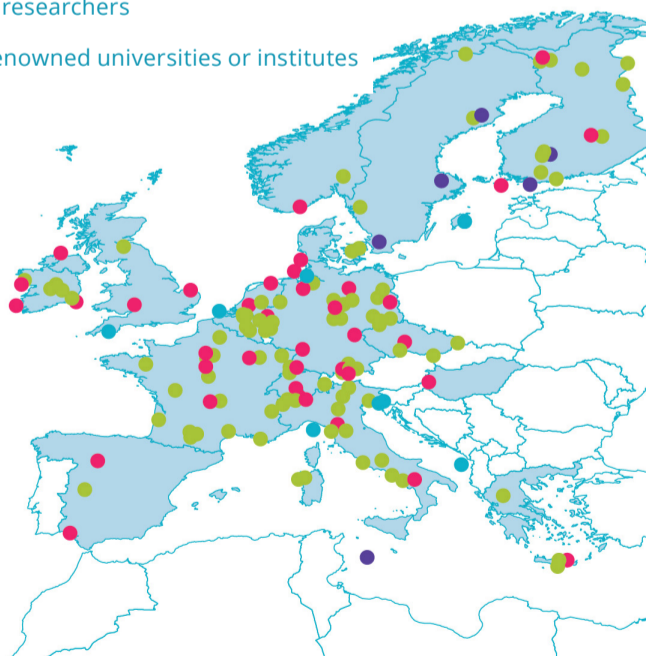
All ICOS Switzerland data are freely available. Still, proper citation and acknowledgment of the data are highly appreciated.



Funding

ICOS Switzerland has been funded by the Swiss National Science Foundation, in-house contributions, and the State Secretariat for Education, Research and Innovation since 2013 (Phase 1: 2013-2017, Phase 2: 2017-2021, Phase 3: 2021-2025, Phase 4: 2025-2029).

- 16 countries
- 180 stations
- 500 researchers
- 80 renowned universities or institutes



Illustrative ICOS station network map (excluding ocean ship lines)

- Ocean station
- Ecosystem station
- Atmosphere station
- Ecosystem-Atmosphere station
- Countries part of the ICOS network

Note: Illustrative map does not represent the entire ICOS station network

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www.icos-switzerland.ch

Picture credits

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